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EXAMINER	
SHOSHO, CALLIE E	
ART UNIT	**PAPER NUMBER**
1714	9

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/806,615	Applicant(s) MATSUO ET AL.	
	Examiner Callie E. Shosho	Art Unit 1714	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10 and 12-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10 and 12-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. All outstanding rejections except for those described below are overcome by applicants' amendment filed 1/27/03.

It is noted that English translations of each of JP 11123869 and JP 09296035 are included with this office action and any reference to JP 11123869 and JP 09296035 is based on these English translations.

The new grounds of rejection as set forth below are necessitated by applicants' amendment and thus, the following action is final.

Claim Objections

2. Claims 10 and 12 are objected to because of the following informalities:

(a) There is a period at the end of the fifth line after the first formulae in claim 10. However, as required under MPEP 608.01(m), except for abbreviations, periods may not be used elsewhere in a claim except at the end of the claim. It is suggested that the period is changed to a comma. Similar suggestion is made in claim 12.

(b) Words appear to missing in the fourth line after the first formulae in claim 10. After "n" and before "94/6", "=" should be inserted.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 16 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 16 recites resin composition according to "any of claims 10". The scope of the claim is confusing given that the claim recites "any of claims" and then only recites one claim. Should more claims be added or should the phrase "any of claims" be deleted.

(b) Claim 27, which depends on claim 26, recites the limitation "the ink jet recording sheet" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim given that there is no recitation of ink jet recording sheet in claim 26. It is suggested that the phrase is changed to "the ink jet recording layer".

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 10, 13, 16-18, 26-27, and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11123869 in view of JP 09296035.

The rejection is adequately set forth in paragraph 5 of the office action mailed 7/23/02, Paper No. 6, and is incorporated here by reference.

With respect to the newly added limitation regarding the weight average molecular weight of the water-absorbing polymer, it is noted that paragraph 26 of JP 09296035 discloses that the polymer possesses weight average molecular weight of 10,000-300,000.

7. Claims 14-15 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11123869 in view of JP 09296035 as applied to claims 10, 13, 16-18, 26-27, and 33-36 above, and further in view of either Abe et al. (U.S. 5,372,884) or Shih et al. (U.S. 6,153,288).

The rejection is adequately set forth in paragraph 7 of the office action mailed 7/23/02, Paper No. 6, and is incorporated here by reference.

8. Claims 25, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11123869 in view of JP 09296035.

JP 11123869 discloses ink jet recording sheet comprising substrate layer and ink receiving layer overlaid onto the substrate layer wherein the ink receiving layer comprises hydrophilic polymer and cationic polymer obtained from 65-98.9% ethylene, 0.1-15% acrylate, and 1-35% acrylamide identical to presently claimed formula IV. The cationic polymer has molecular weight of 1,000-50,000. The ratio of hydrophilic polymer to cationic polymer is 5:1 to 10:1 (paragraphs 5, 12, 21, 29, 36-37, 65, and 74(4)).

The difference between JP 11123869 and the present claimed invention is the requirement in the claims of specific water-absorbing polymer.

While JP 11123869 discloses that the hydrophilic polymer includes those comprising polyalkylene oxide, there is no disclosure of polymer as required in claimed formula I.

JP 09296035 discloses polymer of the formula ($AXAR_2$) wherein A is $(CH_2CH_2O)_n$-$(CH_2CHO)_m$-$(CH_2CH_2O)_p$ where 44(m+p)/72n is 85/15 to 95/5, p/(m+p) is 50% or greater, X is a residue of an organic compound having 2 active hydrogen groups, and R_2 is a residue of dicarboxylic acid. The motivation for using such polymer is that is possesses outstanding water-absorptivity (abstract, paragraphs 4, 15-16, 28, and 76).

In light of the motivation for using specific water-absorbing polymer disclosed by JP 09296035 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polymer in JP 11123869 in order to produce ink jet recording sheet which effectively absorbs water, and thus ink, and thereby arrive at the claimed invention.

9. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11123869 in view of JP 09296035 as applied to claims 25, 38, and 30 above, and further in view of Kojima et al. (U.S. 4,830,911).

The difference between JP 11123869 in view of JP 09296035 and the present claimed invention is the requirement in the claims of specific type of cationic polymer.

JP 11123869 disclose cationic polymer identical to that presently claimed with the exception that the acrylamide monomer of JP 11123869 discloses nitrogen substituted with three alkyl groups, while the acrylamide of presently claimed formula V requires that the nitrogen is substituted with two alkyl groups and one hydrogen group.

However, given the similarity between the claimed monomer and that disclosed by JP 11123869 and given that the compound of JP 11123869 is used in cationic polymer which is used in resin composition for ink receiving layer, which is the identical function of the presently

claimed compound, it would have been natural for one of ordinary skill in the art to infer that the presently claimed compound is just an obvious variant of that in JP 11123869 and to expect that the acrylamide monomer of JP 11123869 would have similar properties as that of presently claimed formula V. Evidence to support this position is found in Kojima et al., which is drawn to ink jet recording sheet, and discloses the equivalence and interchangeability of using acrylamide monomer with nitrogen substituted with three alkyl groups as disclosed by JP 11123869 with acrylamide monomer as presently claimed.

In light of the above, and absent evidence to the contrary, it therefore would have been obvious to one of ordinary skill in the art to use acrylamide monomer as presently claimed, and thereby arrive at the claimed invention.

10. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11123869 in view of JP 09296035 as applied to claims 25, 28, and 30 above, and further in view of either Abe et al. (U.S. 5,372,884) or Shih et al. (U.S. 6,153,288).

The difference between JP 11123869 in view of JP 09296035 and the present claimed invention is the requirement in the claims of surfactant.

Abe et al., which is drawn to ink jet recording sheet, disclose the use of 0.1-7% cationic or nonionic surfactant in order to improve the sharpness of images (col. 3, line 66-col.4, line 16)

Alternatively, Shih et al., which is drawn to ink receptive composition, disclose the use of up to10% cationic or nonionic surfactant in order to help wet pigment and/or enhance quality of resulting composition (col.4, line 66-col.5, line 18).

In light of the motivation for using surfactant disclosed by either Abe et al. or Shih et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such surfactant in JP 11123869 in order to produce ink jet recording sheet which produces sharp images, or alternatively, help wet pigment and/or enhance quality of the ink jet recording sheet, and thereby arrive at the claimed invention.

11. Claim 12, 19, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11123869 in view of JP 09296035 and Kojima et al. (U.S. 4,830,911).

JP 11123869 discloses resin composition for ink jet recording comprising hydrophilic polymer and cationic polymer obtained from 65-98.9% ethylene, 0.1-15% acrylate, and 1-35% acrylamide identical to presently claimed formula IV. The cationic polymer has molecular weight of 1,000-50,000. The ratio of hydrophilic polymer to cationic polymer is 5:1 to 10:1. There is also disclosed an ink jet recording sheet comprising substrate layer and water color ink acceptance layer, i.e. ink receiving layer, which comprises the above composition and an ink jet recording method wherein aqueous ink is applied to ink receiving layer. There is further disclosed a method of producing ink jet recording sheet comprising co-extruding a resin composition that forms substrate layer with resin composition as presently claimed (paragraphs 5, 12, 21, 29, 36-37, 65, and 74(4)).

The difference between JP 11123869 and the present claimed invention is the requirement in the claims of (a) specific water-absorbing polymer and (b) specific cationic polymer.

With respect to difference (a), while JP 11123869 discloses that the hydrophilic polymer includes those comprising polyalkylene oxide, there is no disclosure of polymer as required in claimed formula I.

JP 09296035 discloses polymer of the formula ($AXAR_2$) wherein A is $(CH_2CH_2O)_n$-$(CH_2CHO)_m$-$(CH_2CH_2O)_p$ where 44(m+p)/72n is 85/15 to 95/5, p/(m+p) is 50% or greater, X is a residue of an organic compound having 2 active hydrogen groups, and R_2 is a residue of dicarboxylic acid. The polymer possesses weight average molecular weight of 10,000-300,000. The motivation for using such polymer is that is possesses outstanding water-absorptivity (abstract, paragraphs 4, 15-16, 26, 28, and 76).

In light of the motivation for using specific water-absorbing polymer disclosed by JP 09296035 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polymer in JP 11123869 in order to produce composition which effectively absorbs water, and thus ink, and thereby arrive at the claimed invention

With respect to difference (b), JP 11123869 disclose cationic polymer identical to that presently claimed with the exception that the acrylamide monomer of JP 11123869 discloses nitrogen substituted with three alkyl groups, while the acrylamide of presently claimed formula V requires that the nitrogen is substituted with two alkyl groups and one hydrogen group.

However, given the similarity between the claimed monomer and that disclosed by JP 11123869 and given that the compound of JP 11123869 is used in cationic polymer which is used in resin composition for ink receiving layer, which is the identical function of the presently claimed compound, it would have been natural for one of ordinary skill in the art to infer that the presently claimed compound is just an obvious variant of that in JP 11123869 and to expect that

the acrylamide monomer of JP 11123869 would have similar properties as that of presently claimed formula V. Evidence to support this position is found in Kojima et al., which is drawn to ink jet recording sheet, and discloses the equivalence and interchangeability of using acrylamide monomer with nitrogen substituted with three alkyl groups as disclosed by JP 11123869 with acrylamide monomer as presently claimed.

In light of the above, and absent evidence to the contrary, it therefore would have been obvious to one of ordinary skill in the art to use acrylamide monomer as presently claimed, and thereby arrive at the claimed invention.

12. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11123869 in view of JP 09296035 and Kojima et al. as applied to claims 12, 19, and 22-24 above, and further in view of either Abe et al. (U.S. 5,372,884) or Shih et al. (U.S. 6,153,288).

The difference between JP 11123869 in view of JP 09296035 and Kojima et al. and the present claimed invention is the requirement in the claims of surfactant.

Abe et al., which is drawn to ink jet recording sheet, disclose the use of 0.1-7% cationic or nonionic surfactant in order to improve the sharpness of images (col. 3, line 66-col.4, line 16)

Alternatively, Shih et al., which is drawn to ink receptive composition, disclose the use of up to10% cationic or nonionic surfactant in order to help wet pigment and/or enhance quality of resulting composition (col.4, line 66-col.5, line 18).

In light of the motivation for using surfactant disclosed by either Abe et al. or Shih et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use

such surfactant in JP 11123869 in order to produce sharp images, or alternatively, help wet pigment and/or enhance quality, and thereby arrive at the claimed invention.

Response to Arguments

13. Applicants' arguments filed 1/27/03 have been fully considered but they are not persuasive.

Specifically, applicants argue that:

(a) the cited prior art does not disclose water-absorbing polymer and cationic polymer with molecular weight as required in the present claims.

(b) The ink receiving layer of JP 11123869 requires solid particles to prevent adhesiveness, surface tackiness, blocking property, and to add lubricating property.

(c) JP 11123869 requires that glue line must first be applied to the substrate followed by ink receiving layer which is in direct contrast to the present claims which require that the ink receiving layer is overlaid onto the substrate layer.

With respect to argument (a), applicants argue that by adjusting the weight average molecular weight (Mw) of the water-absorbing polymer to between 10,000 and 300,000 and by adjusting Mw of cationic polymer to between 1,000 and 50,000, the ink jet recording sheet of the present invention can be directly adhered onto substrate layer without interposing glue line.

While JP 11123869 discloses cationic polymer with Mw identical to that presently claimed, it is agreed that JP 11123869 does not disclose water-absorbing polymer with Mw as presently claimed. However, this is why JP 11123869 is used in combination with JP 09296035

which discloses water-absorbing polymer identical that presently claimed and which has Mw of 10,000-300,000 identical to Mw presently claimed.

With respect to argument (b), it is noted that page 3, first full paragraph of JP 11123869 discloses that the solid particles are used "if necessary". That is, the solid particles are not a required part of the resin composition of JP 11123869.

Further, it is noted that the present claims are drawn to resin composition, ink jet recording sheet, and method of producing ink jet recording sheet with no limitations in the claims regarding adhesiveness. This is especially true with respect to claims 10, 12-15, and 19-21 which are drawn to a resin composition. These claims only require combination of water-absorbing polymer and cationic polymer which is clearly met by the combination of JP 11123869 and JP 09296035.

Additionally, given the open language of the present claims, i.e. resin composition or ink receiving layer "comprising", the claims are clearly open to the inclusion of additional ingredients including solid particles as disclosed by JP 11123869.

With respect to argument (c), it is noted that paragraphs 45 and 51 of JP 11123869 disclose that the ink receive layer (A) can be overlaid directly onto the substrate (C). Further, it is noted that in light of the open language of the present claims, i.e. ink receiving recording sheet "comprising", it is clear that the ink recording sheet is open to the inclusion of layers additional to the substrate layer and ink receiving layer.

Additionally, it is noted that the present claims require only that the ink receiving layer is overlaid onto the substrate layer. There is no requirement in the present claims the ink receiving layer is directly overlaid onto the substrate layer. That is, even if there is an interposing layer between the ink receiving layer and the substrate layer, the ink receiving layer still overlays the substrate layer.

Applicants also argue that there is no disclosure in JP 09296035 directed to adhesiveness to the substrate layer.

Although there is no disclosure in JP 09296035 that the water-absorbing polymer imparts adhesiveness, while the motivation for using the water-absorbing polymer disclosed by JP 09296035 may not be the same motivation as in the present invention, it is noted that "obviousness under 103 is not negated because the motivation to arrive at the claimed invention as disclosed by the prior art does not agree with appellant's motivation.", *In re Dillon*, 16 USPQ2d 1897 (Fed. Cir. 1990), *In re Tomlinson*, 150 USPQ 623 (CCPA 1996).

Further, given that the combination of JP 11123869 and JP 09296035 disclose water-absorbing polymer and cationic polymer identical to that presently claimed, it is clear that such combination will intrinsically possess adhesiveness.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie E. Shosho
Examiner
Art Unit 1714

CS
May 3, 2003